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NASA EARTH SCIENCE ACTIVITIES SUPPORTING RESPONSE TO AND PREPAREDNESS FOR NATURAL DISASTERS

Abstract

Annually, the U.S. is impacted by meteorological disasters ranging from severe thunderstorms with damaging winds, hail, and tornadoes, to heavy seasonal rains and major river basin flooding, and impacts from tropical cyclones including coastal surge, damaging winds, torrential inland rains, and flooding. The NASA Earth Science Disasters Program collaborates with domestic U.S. disaster preparedness, response, and recovery teams to incorporate NASA remote sensing and scientific outcomes and applications to a broadening constellation of public, international, and commercial satellite assets. In 2018, the Disasters Program responded to major events including Hurricane Florence's damaging winds, record-setting rainfall and multiple weeks of extensive river flooding, and impacts from Hurricane Michael, with significant surge and widespread wind damage to the Florida Panhandle, while broader impacts of winds, rains, and flooding was experienced in Alabama, Georgia, the Carolinas, and the northeast. Specific to Florence, long-lasting river flooding was mapped by NASA's UAVSAR instrument with daily L-band and polarimetric remote sensing of major North and South Carolina river systems to assist with immediate flood mapping, to help calibrate and validate other remote sensing products, and was used post-event by partners to assist with validation of hydrodynamic flood models. Further, these collected images may help to prepare the remote sensing community for the availability of similar imaging from the NISAR mission. In 2019, team members continued collaborations with disaster response partners for meteorological hazards impacting the U.S., and participated in follow-up activities from 2018 efforts to assess products and improve efficiency of procedures for future response efforts. To continue building collaborations around and understanding of remote sensing, team members also participated in the 2019 National Level Exercise, simulating a major disaster event in the southeastern U.S., along with demonstrated potential of remote sensing information applicable to the exercise, along with appropriate training materials to help integrate these tools in decision-making efforts.

This presentation will highlight contributions and collaborations between the NASA Earth Science Disasters Program, partnering scientists, and end users involved in all aspects of the disaster risk assessment, response, recovery, and resilience efforts.